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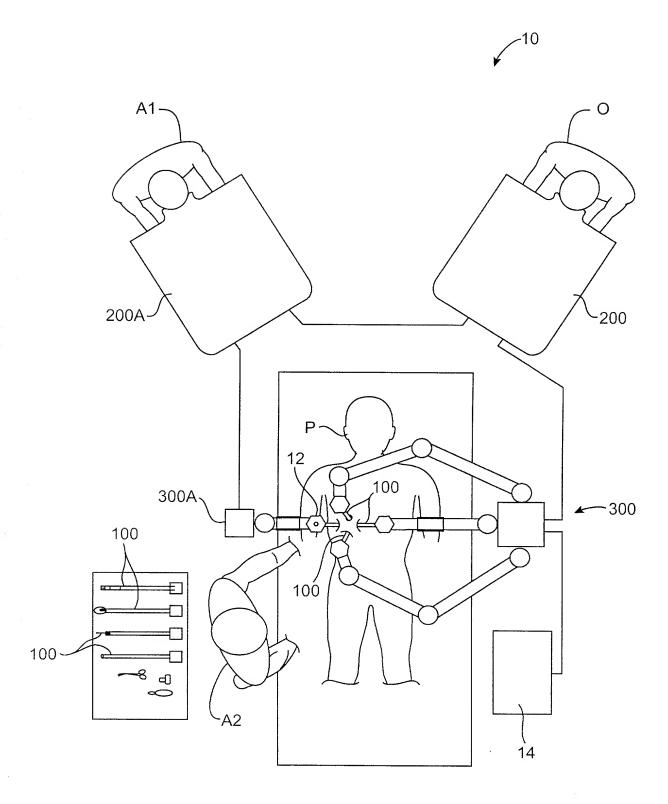


FIG. 1

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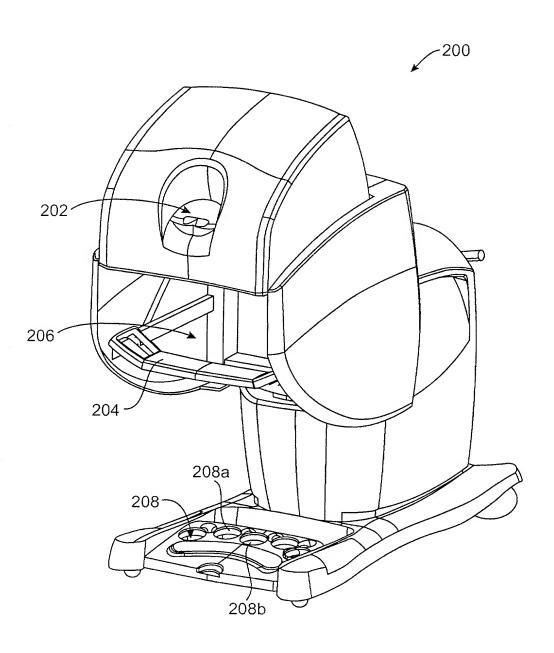
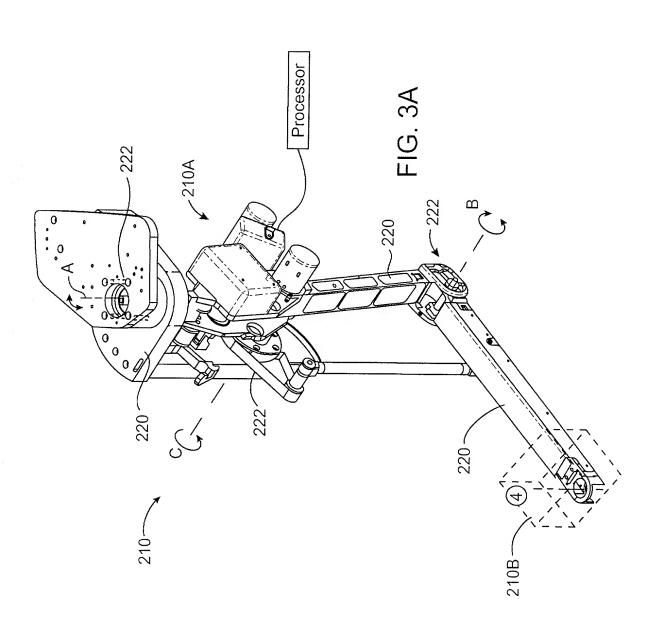
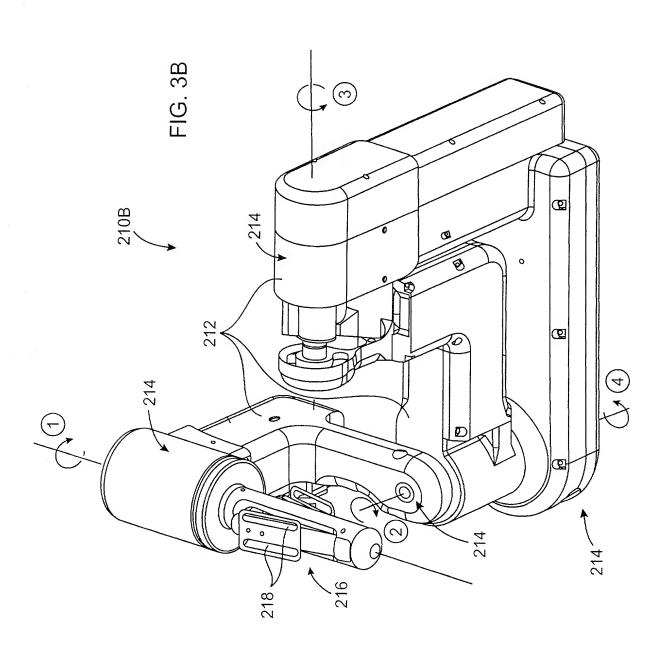


FIG.2

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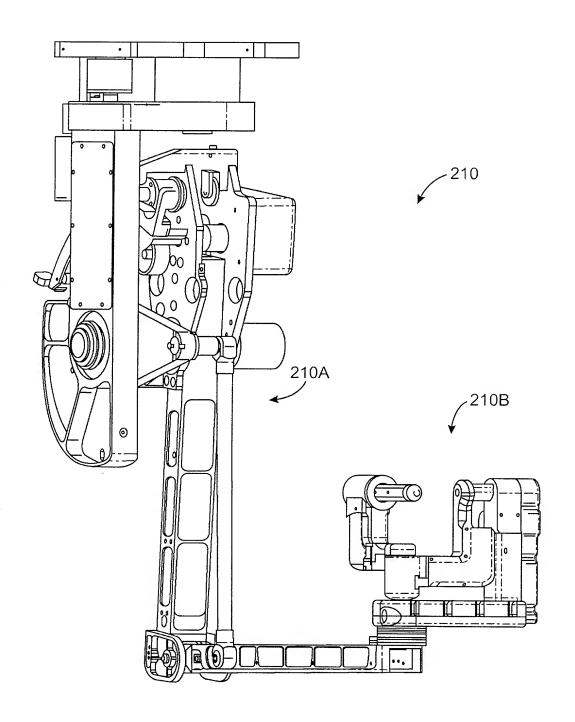
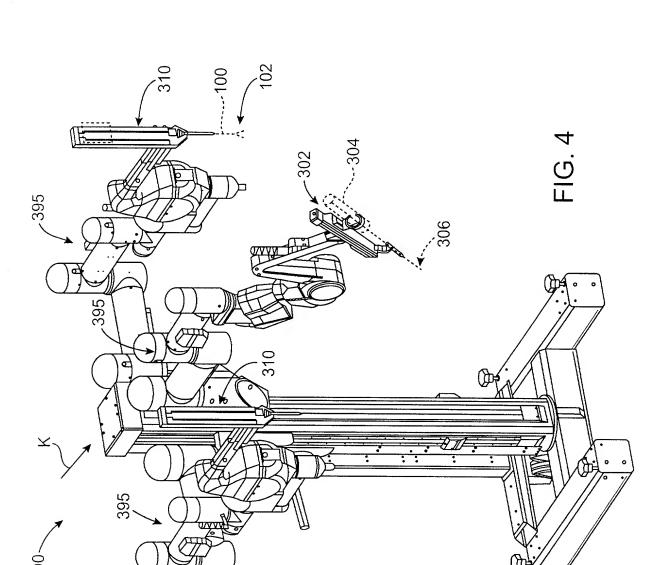


FIG. 3C

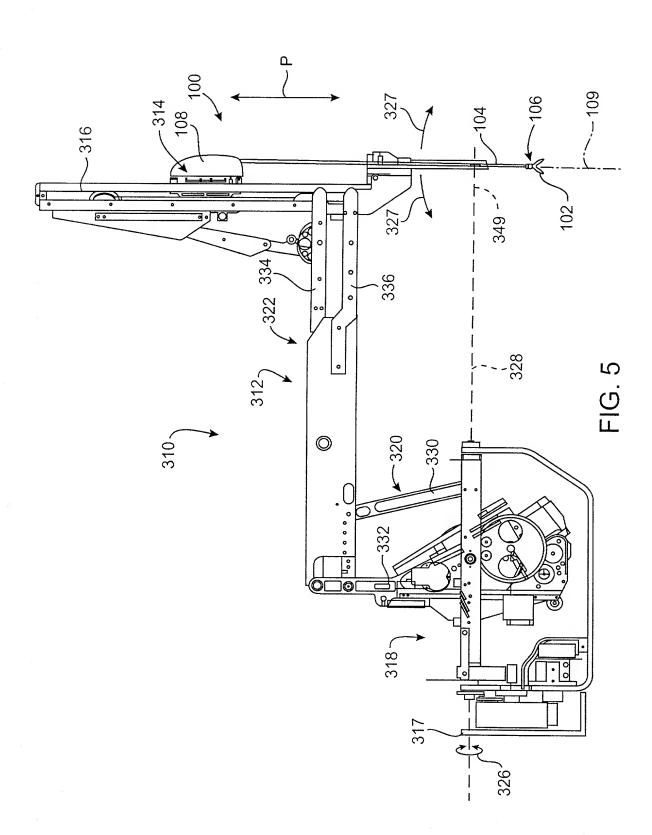
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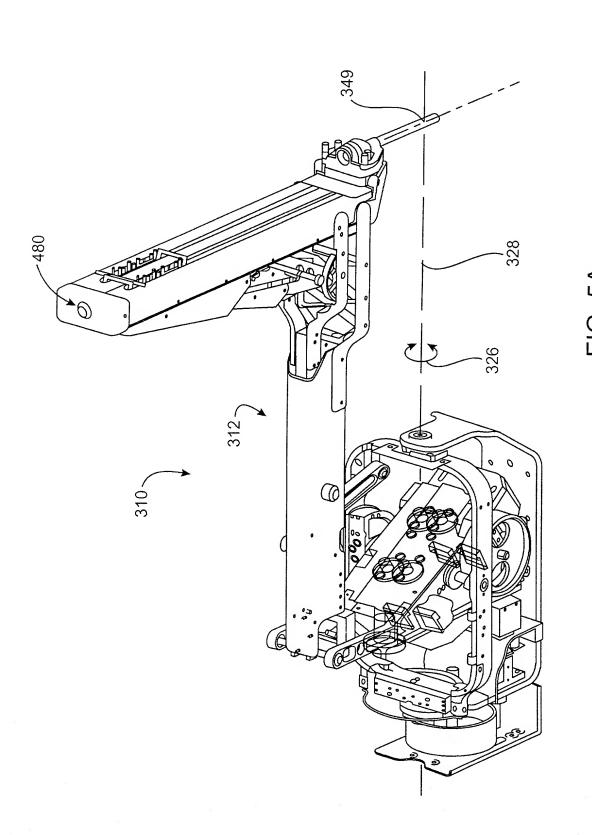


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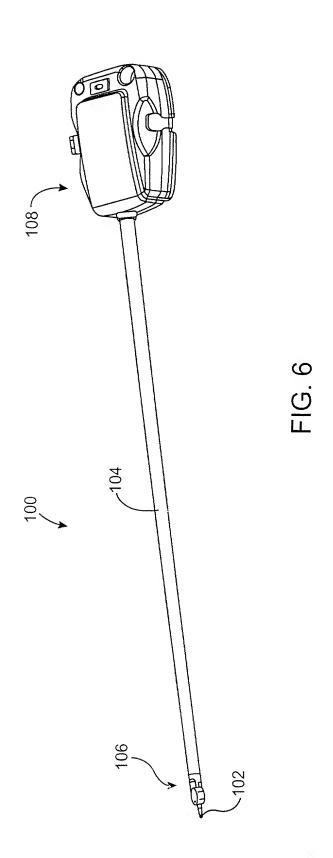
Atty. Docket No: 17516-001320
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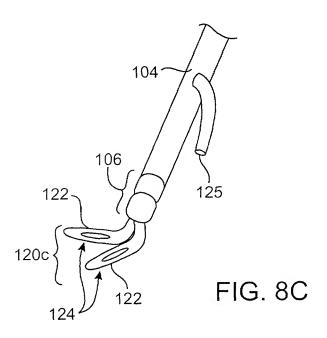
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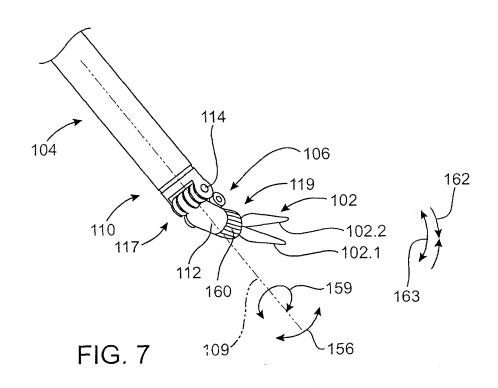


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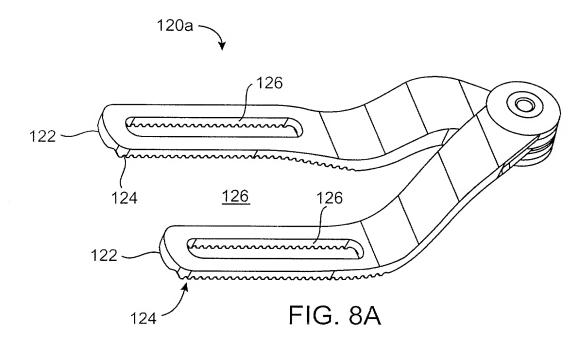
Atty. Docket No.: 17516-001320
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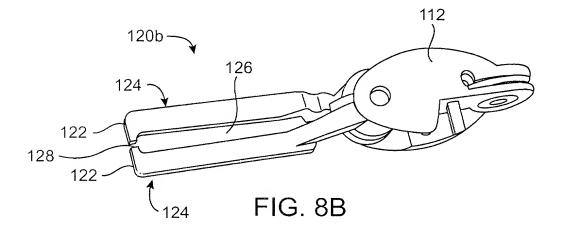




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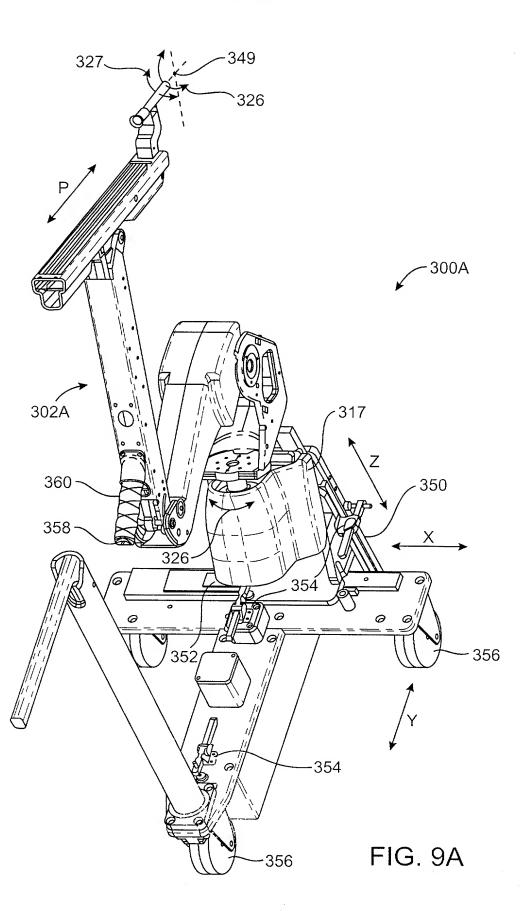
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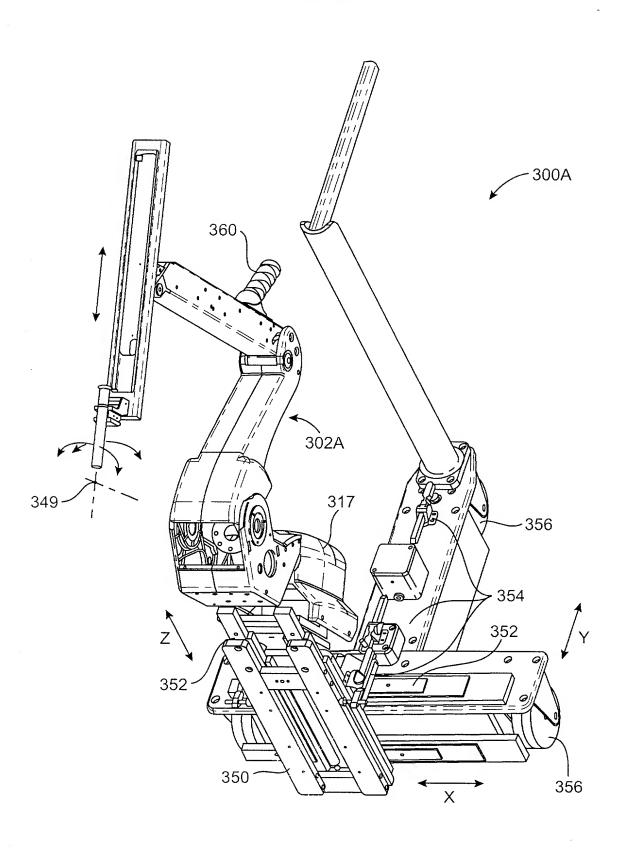
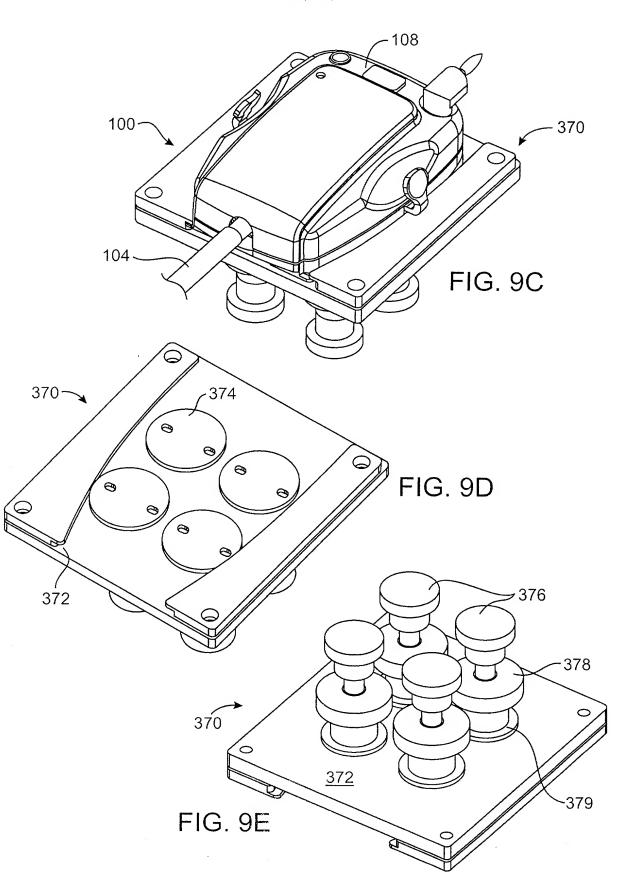


FIG. 9B

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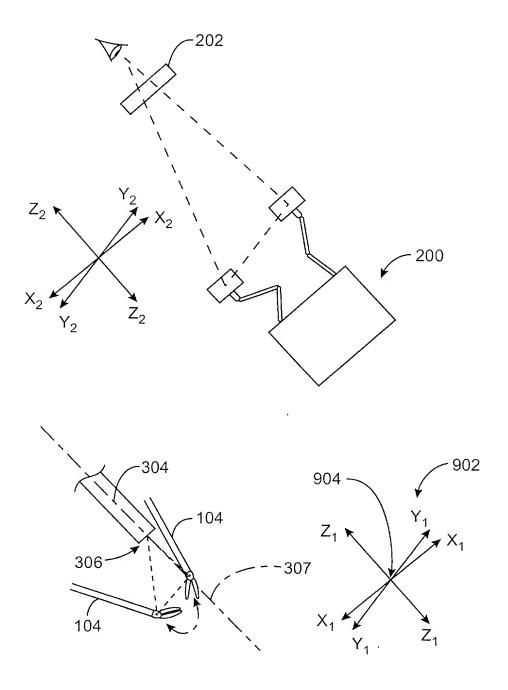
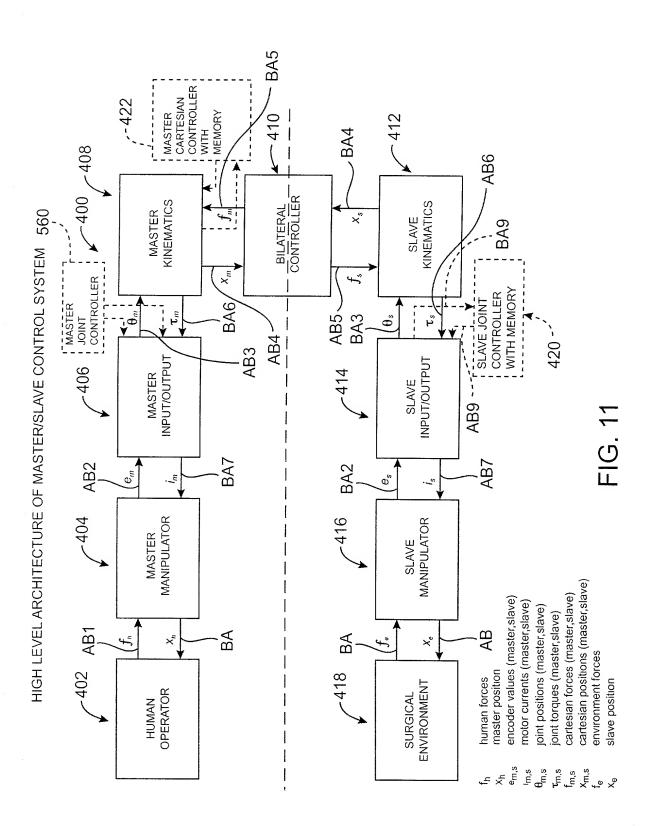


FIG. 10

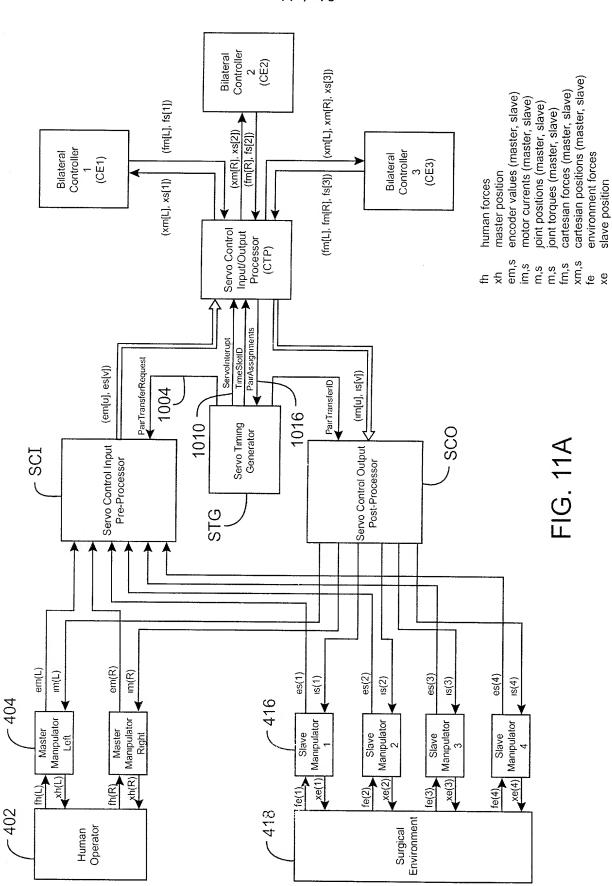
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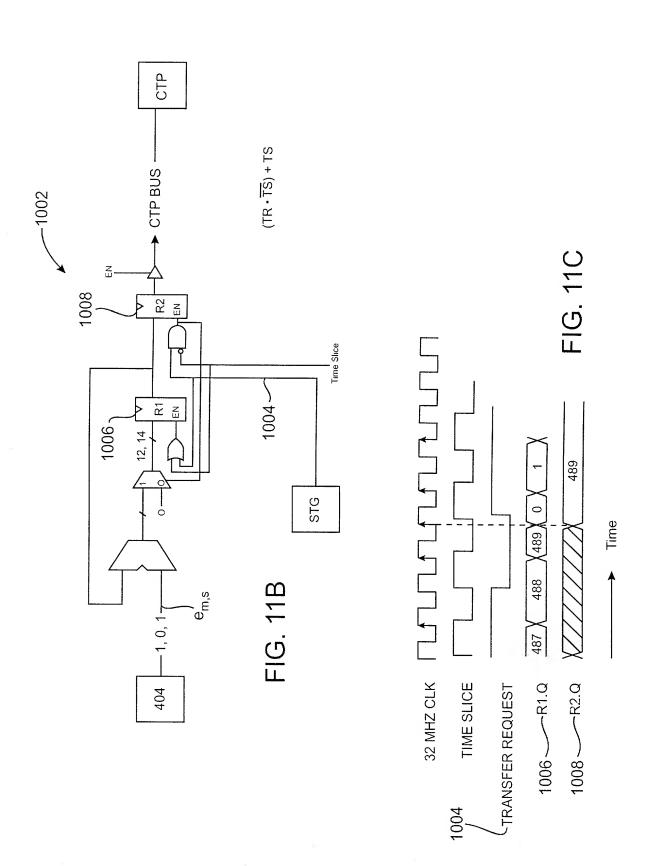
Atty. Docket No.: 17516-001320
Applicant: NOWLIN, William C. et al.
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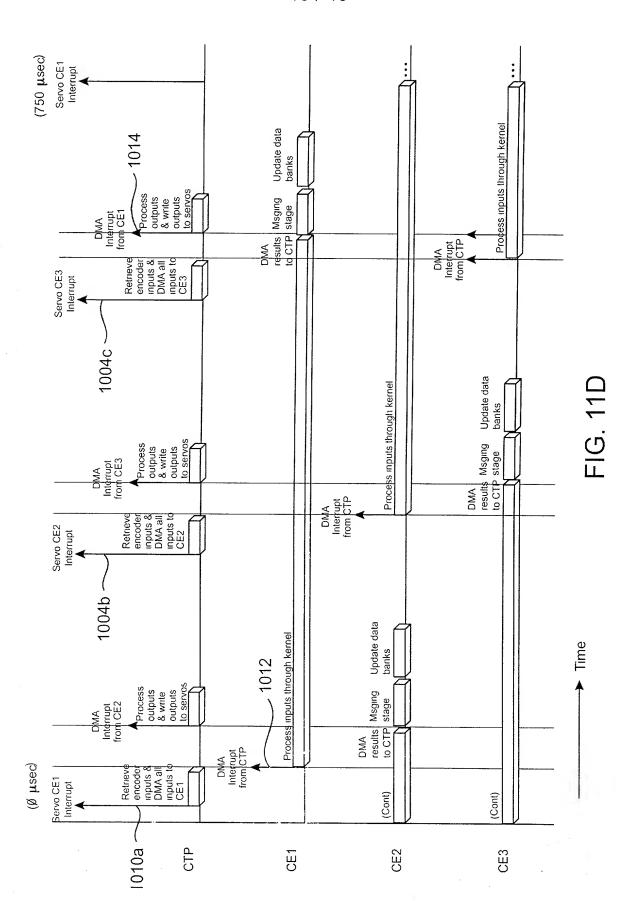


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MASTER RE-POSITIONING

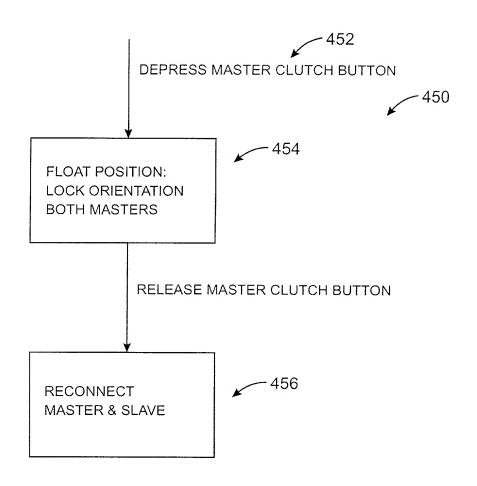


FIG. 12

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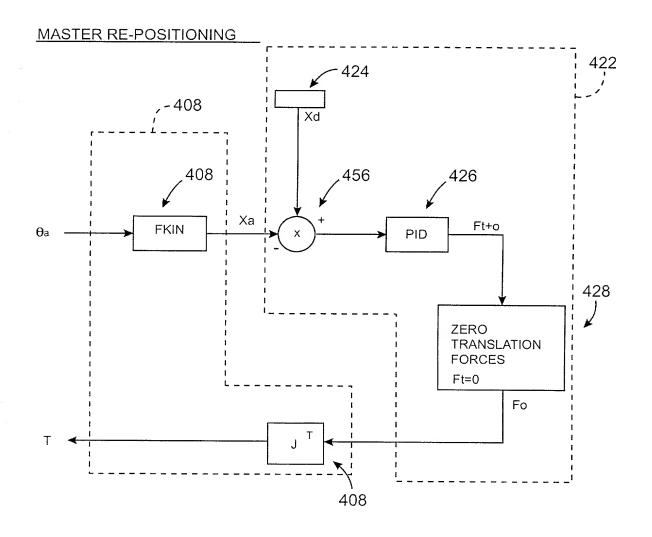


FIG. 13

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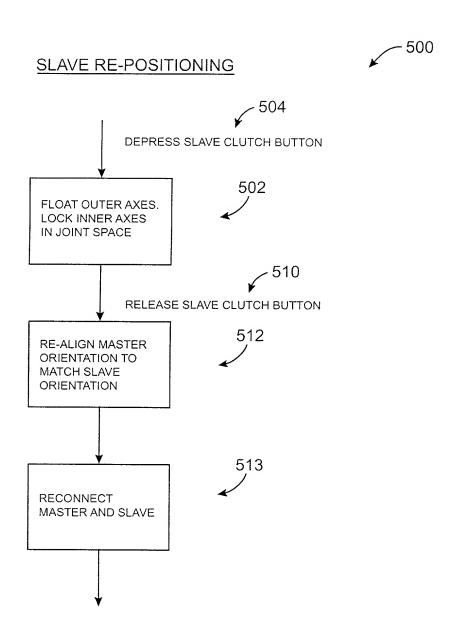


FIG. 14

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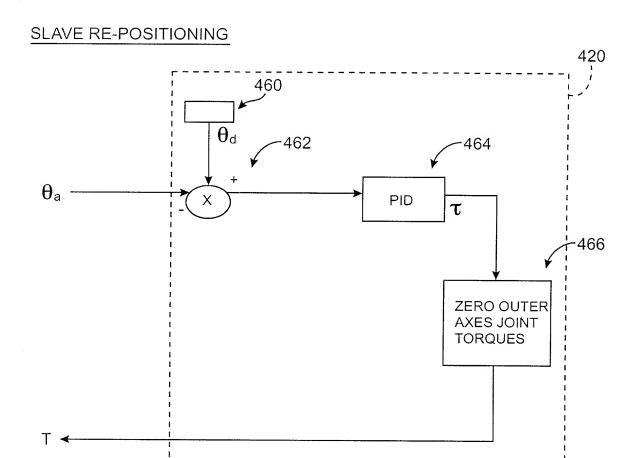


FIG. 15

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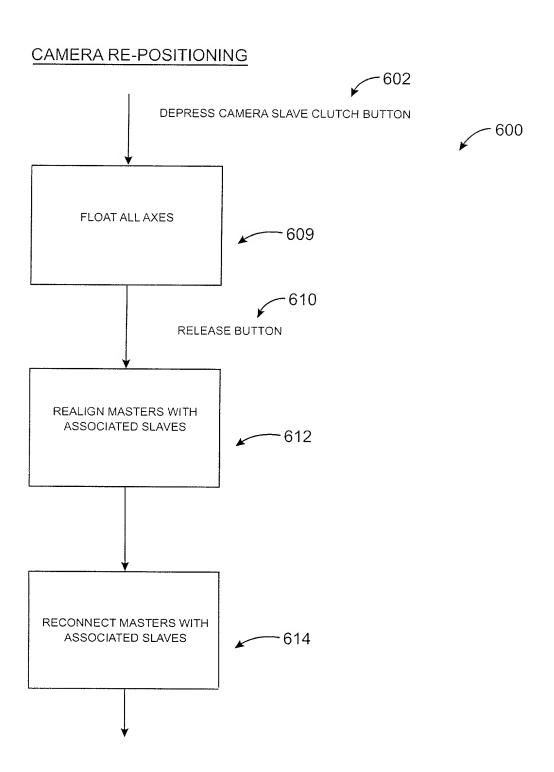


FIG. 16

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CAMERA RE-POSITIONING

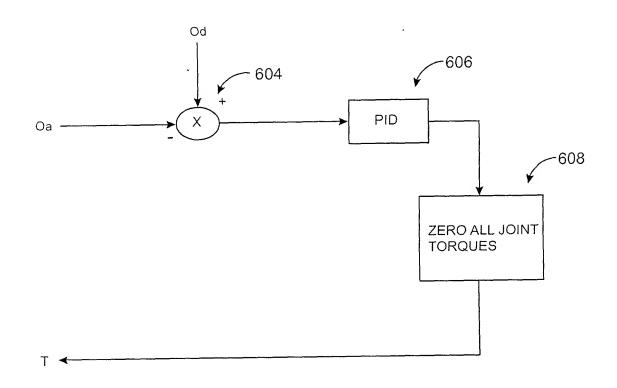


FIG. 17

INCERTA CEUSIE

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MASTER ALIGNMENT

(FORCING MASTER ORIENTATION TO EQUAL SLAVE ORIENTATION)

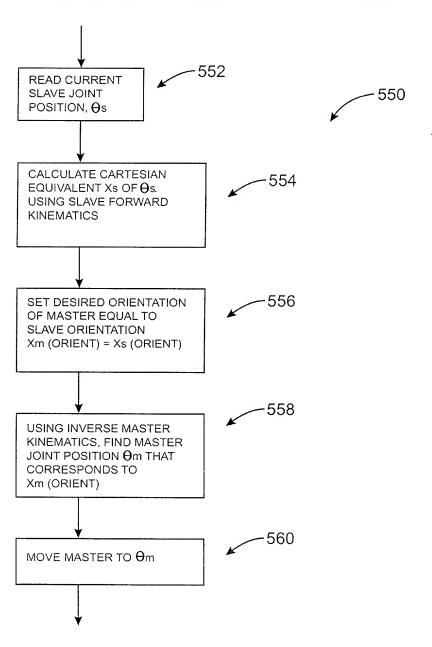


FIG. 18

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RE-CONNECTING MASTER AND SLAVE - 472 IS MASTER -470 ORIENTATION RE-EXECUTE NO SUFFICIENTLY MASTER **CLOSE TO ALIGNMENT** SLAVE **ORIENTATION?** YES 474 SNAP DESIRED SLAVE ORIENTATION TO ACTUAL MASTER ORIENTATION IN CARTESIAN SPACE -476ENABLE JACOBIAN INVERSE CONTROLLER ON SLAVE **—** 478 DOWLOAD CARTESIAN FORCE REFLECTION COMMANDS AND GAINS FIG. 19

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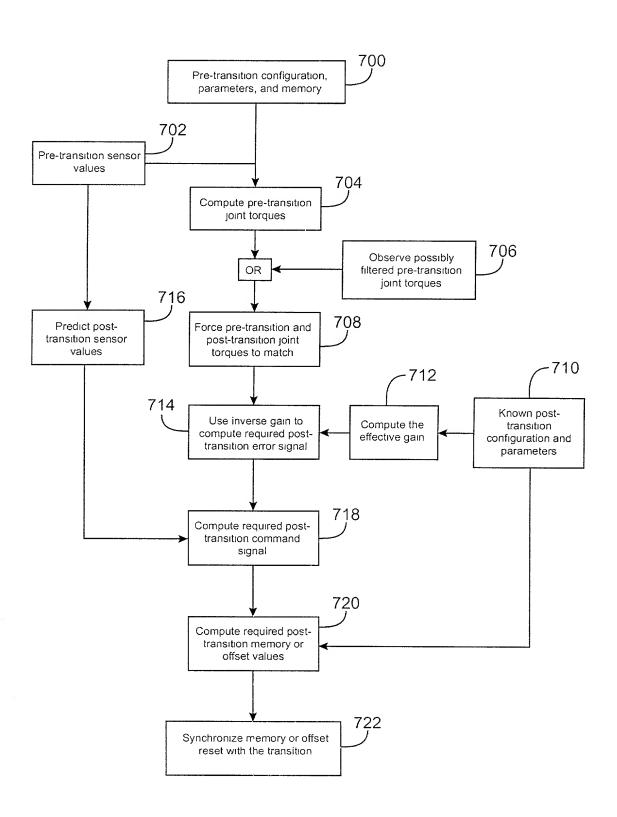


FIG. 19A

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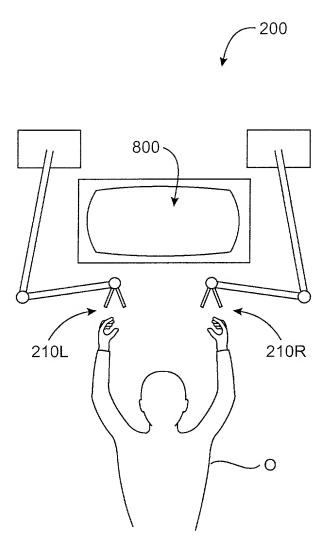
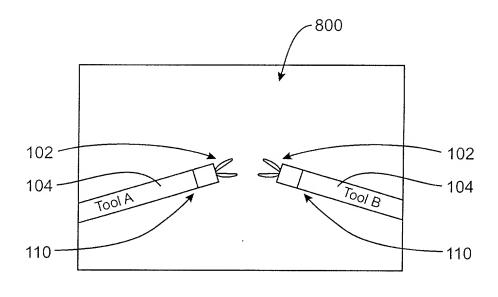


FIG. 20

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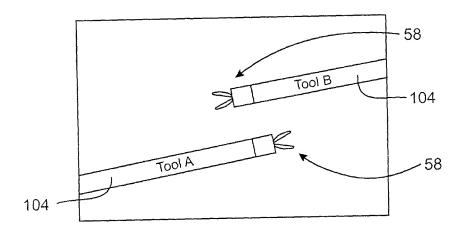
Associate Tool A ← Left Master

Tool B ← Right Master

FIG. 21

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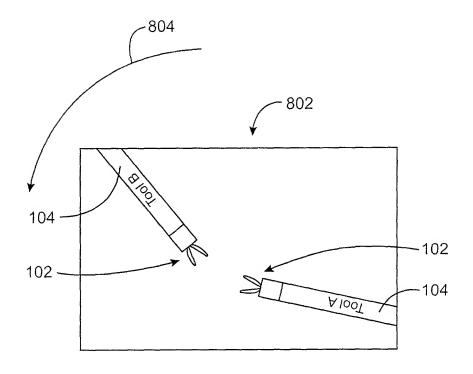
Associate Tool A ← Left Master

Tool B ← Right Master

FIG. 21A

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Associate Tool A ←→ Right Master

Tool B ←→ Left Master

FIG. 22

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y Left Right Side Side Midpoint between remote centers /Interdeterminate Region X

FIG. 22A

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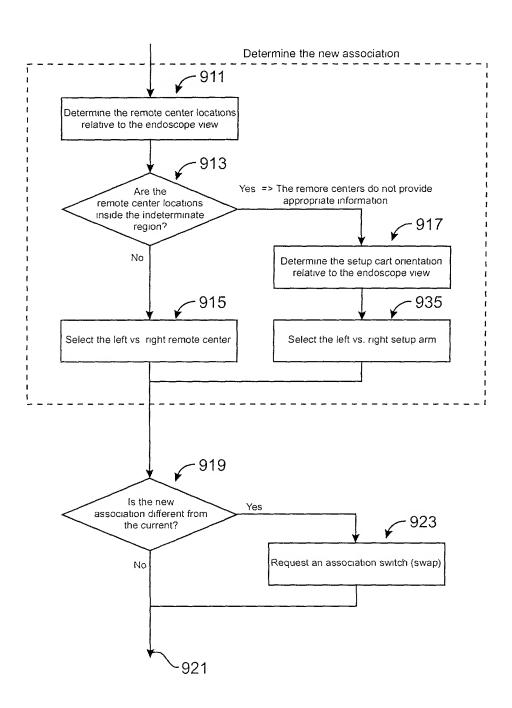


FIG. 22B

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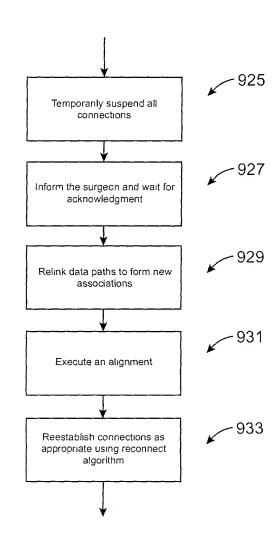


FIG. 22C

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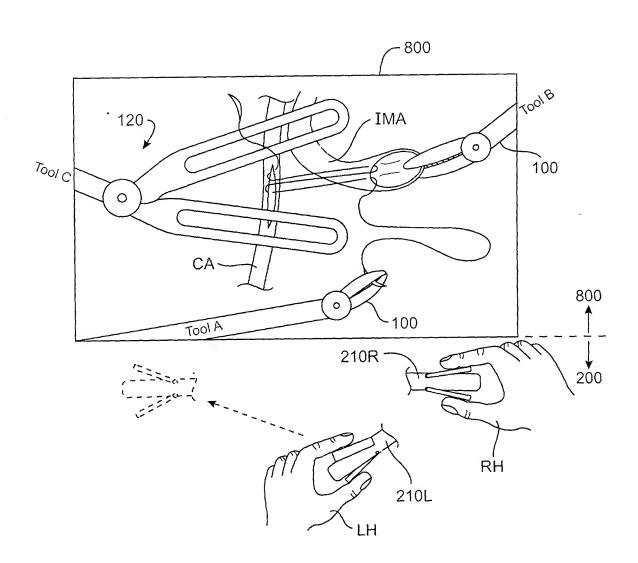
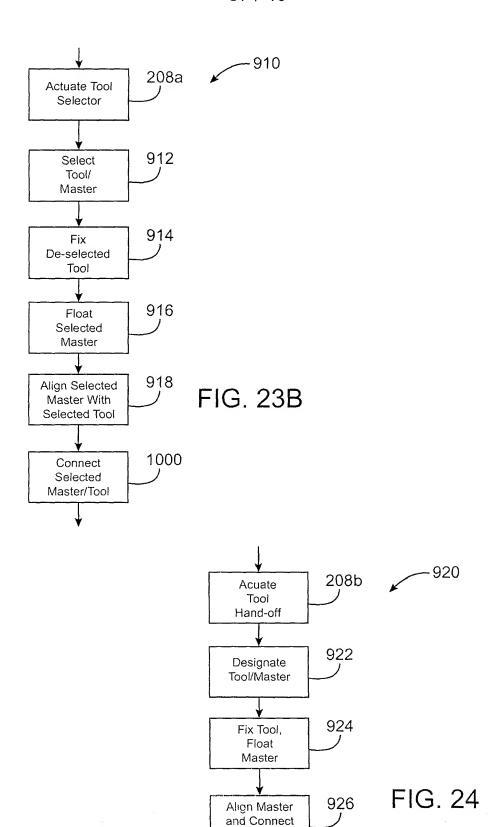


FIG. 23A

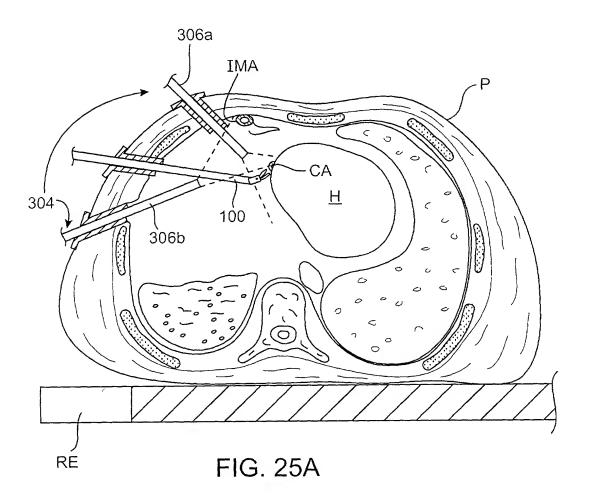
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Tool

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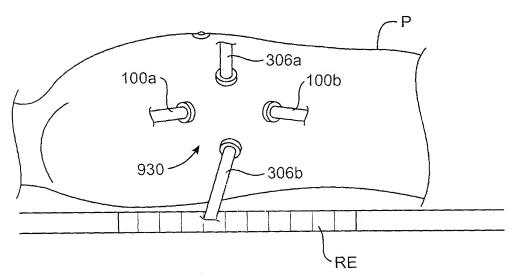


FIG. 25B

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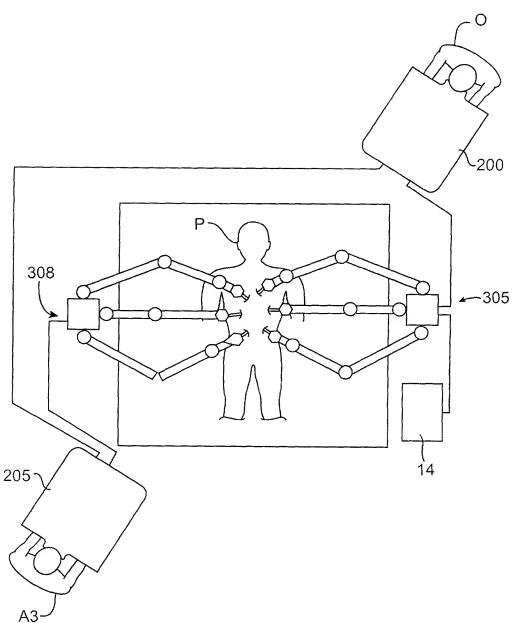


FIG. 26

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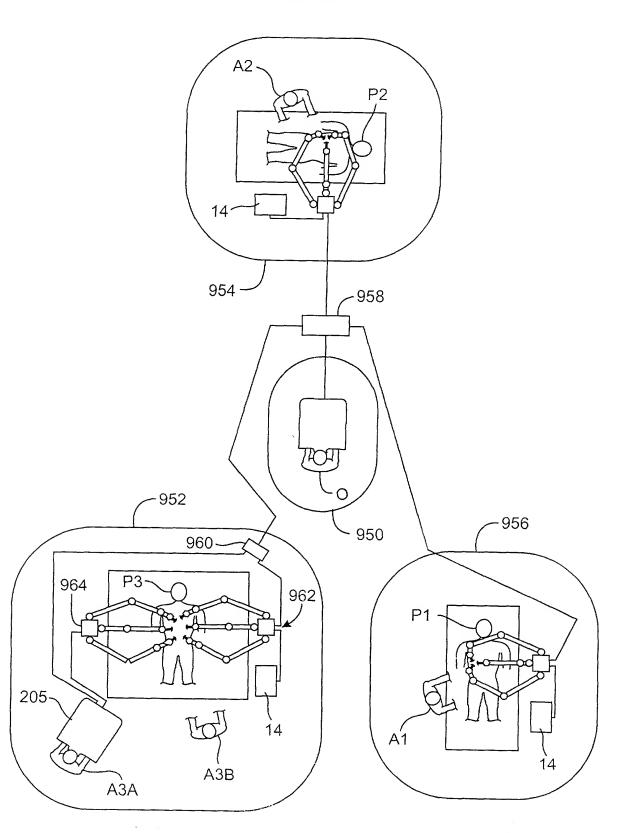


FIG. 27